CLAIMS

We claim:

1. A system for compensating for phase errors in the real and quadrature channels of a phase modulation system comprising:

an I input channel for receiving the real (I) components of a carrier signal;

a Q input channel for receiving the quadrature (Q) components of a carrier signal; and

a compensation circuit for multiplying said I channel and Q channel signals to develop a first product signal and averaging said product signal to generate a compensated channel signal.

2. The system as recited in claim 1, wherein said compensated channel signal is the Q channel compensated channel signal.

3. The system as recited in claim 1, wherein said compensation circuit includes a first multiplier for multiplying said I channel signal and said Q channel signal to generate said first product signal.

4. The system as recited in claim 3, further including an averaging circuit for time averaging said product signal.

5. The system as recited in claim 4, wherein said time averaging circuit is a low pass filter.

6. The system as recited in claim 4, further including a second multiplier for multiplying said I channel signal by a predetermined constant to define a second product signal.

7. The system as recited in claim 6, further including a third multiplier for multiplying said first and second product signals to generate a third product signal.

8. The system as recited in claim 7, further including a summer for summing said Q channel signal with said third product signal, wherein said Q channel signal is applied to a non-inverting input of said summer and said third product signal is applied to an inverting input of said summer to generate a compensated Q channel signal.

9. The system as recited in claim 8, wherein said compensated Q channel signal includes a compensation factor which is a function of said phase error.

10. The system as recited in claim 9, wherein said compensated Q channel signal is the compensation factor multiplied by $\sin(\omega t)$.

11. The system as recited in claim 10, wherein said compensation factor is $\cos(\psi)$.

12. A method for compensating for phase errors in the real (I) and quadrature (Q) channels of a phase modulation system comprising the steps of:

a) multiplying the I channel signal by the Q channel signal to develop a first product signal;

b) averaging the product signal over time, defining a time averaged product signal; and

c) generating a compensated Q channel signal based upon said time averaged product signal.

13. The method as recited in claim 12, including multiplying said time averaged product signal by a multiple of said I channel signal to generate a second product signal.

14. The method as recited in claim 13, including subtracting said second product signal from said Q channel signal.